WHAT IS CLAIMED IS:

1. In a spread spectrum, chip-synchronous CDMA communication system, the method of improving quality of service (QoS), increasing range of coverage and increasing traffic capacity wherein: said spread spectrum, chip-synchronous CDMA communication system includes a multiplicity of user channels, each user channel including digital quadrature (I, Q) channels and a common multiplexer for all said I, Q channels, said method comprising the steps of:

separately multiplexing all said I channels and all said Q channels into two separate constant-envelope baseband signals,

baseband filtering both said constant-envelope baseband signals to produce baseband-filtered signals,

upconverting both said baseband filtered signals to radio frequency (RF),

combining both said upconverted signals in quadrature at RF,

and broadcasting the said upconverted baseband filtered signals at RF.

2. The method of claim 1 further comprising the step of receiving from an external source a set of chip-synchronous CDMA signals to be transmitted.

3. The method of claim 1 further comprising the step of receiving from an external source a commanded RF power distribution among the said chip-synchronous CDMA signals to be transmitted.

4. The method of claim 1 further comprising the step of selecting the instantaneous multiplex algorithm to achieve said commanded RF power distribution among the said signals to be transmitted.

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5. The method of claim 1 further comprising the step of selecting, on a chip-by-chip basis, the polarity (±1) of the I and Q chips comprising the multiplexer output baseband signal.

6. The method of claim 1 further comprising the step of generating two digital baseband signals consisting of the sequences of I and Q chips generated by the said multiplexer.

7. In a spread spectrum, chip-synchronous CDMA communication system, apparatus for improving quality of service (QoS), increasing range of coverage and increasing traffic capacity wherein: said spread spectrum, chip-synchronous CDMA communication system includes a multiplicity of user channels, each user channel including

digital quadrature (I, Q) channels and a common multiplexer for all said I, Q channels, said apparatus comprising:

a multiplexer for separately multiplexing all said I channels and all said Q channels into two separate constant-envelope baseband signals,

baseband filter for baseband filtering both said constant-envelope baseband signals to produce baseband-filtered signals,

an upconverter for upconverting both said baseband filtered signals to radio frequency (RF),

a combiner for combining both said upconverted signals in quadrature at RF,

and broadcasting the said upconverted baseband filtered signals at RF.

8. The apparatus defined in claim 7 further comprising a receiver for receiving from an external source a set of chip-synchronous CDMA signals to be transmitted.

9. The apparatus defined in claim 7 further including a receiver for receiving from an external source a commanded RF power distribution among the said chip-synchronous CDMA signals to be transmitted.

10. The apparatus defined in claim 8 further including a selector for selecting the instantaneous

multiplex algorithm to achieve said commanded RF power distribution among the said signals to be transmitted.

11. The apparatus defined in claim 7 further including a polarity selector for selecting, on a chip-by-chip basis, the polarity (±1) of the I and Q chips comprising the multiplexer output baseband signal.

12. The apparatus defined in claim 7 further including a generator for generating two digital baseband signals consisting of the sequences of I and Q chips generated by the said multiplexer.

13. In a CDMA communication system having a multiplicity of user data channels each user data channel including quadrature (I, Q) channels and a common multiplexer for all said I, Q channels, the improvement for enhancing quality of service (QoS) and increasing traffic capacity comprising a baseband filter for baseband filtering said I, Q channels after multiplexing by said multiplexer and an upconverter for upconverting the baseband filtered signals and broadcasting the upconverted baseband filtered signals at RF.

14. In a CDMA communication system, the method of improving quality of service (QoS) and increasing traffic capacity wherein:

said CDMA communication system includes a multiplicity of user data channels, each data channel including quadrature (I, Q) channels and a common multiplexer for all said I, Q channels, said method comprising the steps of baseband filtering said I, Q channels after multiplexing by said multiplexer to produce baseband filtered signals and then upconverting the baseband filtered signals and broadcasting the upconverted baseband filtered signals at RF.

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